

CLAIMS

1. A method for determining the quantity of items in a container, each item having the same nominal weight located
5 between upper and lower weight limits, the method comprising:
- 10 a. attempting to transfer a predetermined quantity, n , of the items to the container, the predetermined quantity, n , being selected such that the product of $(n+1)$ and the lower weight limit exceeds the product of n and the upper weight limit and such that the product of n and the lower weight limit exceeds the product of $(n-1)$ and the upper weight limit;
 - 15 b. measuring the weight of the actual quantity of items transferred to the container in step (a); and,
 - 20 c. dividing the value of the weight ascertained in step (b) by the nominal weight to determine the actual quantity of items packed in the container in step (a).
2. A method according to claim 1, wherein steps (a) to (c) are repeated until the sum of the predetermined quantities of step (a) of each repetition equals a
25 specified quantity.
3. A method according to either of the preceding claims, wherein the weight of step (b) is measured using a check weigher.
4. A method according to claim 3, wherein the check
30 weigher is part of a production line.
5. A method according to claim 4, wherein the production lines includes an upstream packaging machine.
6. A method according to any of the preceding claims, wherein the items are packets of snack foods.
- 35 7. A method according to any of the preceding claims, wherein if the actual quantity determined in step (c) is

different from the predetermined quantity of step (a) then the container is conveyed to a reject location.

8. A method according to claim 7, wherein the reject location is a reject conveyor belt.

5 9. A method according to either of claims 7 or 8, wherein if the actual quantity determined in step (c) is less than the predetermined quantity of step (a) then additional items are packed in the container so that it does contain the predetermined quantity of items.

10 10. A method according to either of claims 7 or 8, wherein if the actual quantity determined in step (c) is more than the predetermined quantity of step (a) then the surplus items are removed from the container so that it contains the predetermined quantity of items.

15 11. Apparatus for determining the quantity of items in a container, each item having the same nominal weight located between upper and lower weight limits, the apparatus comprising:

20 a. a transfer system for attempting to transfer a predetermined quantity, n , of the items to the container, the predetermined quantity, n , being selected such that the product of $(n+1)$ and the lower weight limit exceeds the product of n and the upper weight limit and such that the product of n and the lower weight limit exceeds the product of $(n-1)$ and the upper weight limit;

25 b. a weighing system for measuring the weight of the actual quantity of items transferred to the container in step (a); and,

30 c. a controller for receiving, from the weighing system, a signal indicating the value of the weight ascertained in step (b) and for dividing this value by the nominal weight to determine the actual quantity of items packed in the container in step (a).

35 12. Apparatus according to claim 11, wherein the transfer system is a vacuum head.

13. Apparatus according to claim 12, wherein the weighing system is incorporated in the vacuum head.

14. Apparatus according to claim 11 or claim 12, wherein the weighing system is incorporated in a conveyor system
5 that supports the container in use.

15. Apparatus according to claim 11, wherein the items are supplied to the transfer system by an infeed conveyor system for holding and conveying a group of items in a conveyance-direction, the infeed conveyor system
10 comprising:

a first conveyor, including

a first roller,

a first conveyance member wound around said first roller,

15 a first items-group holder for conveying the group of items, said first items-group holder having a plurality of partition members that is connected to one another, and

a first detaching/attaching mechanism disposed between said first conveyance member and said first items-group
20 holder for detachably and reattachably coupling said first items-group holder to said first conveyance member.

16. Apparatus according to claim 15, wherein the transfer system transfers the group of items at the discharge position by pushing in a direction of the width of said
25 first conveyance member.